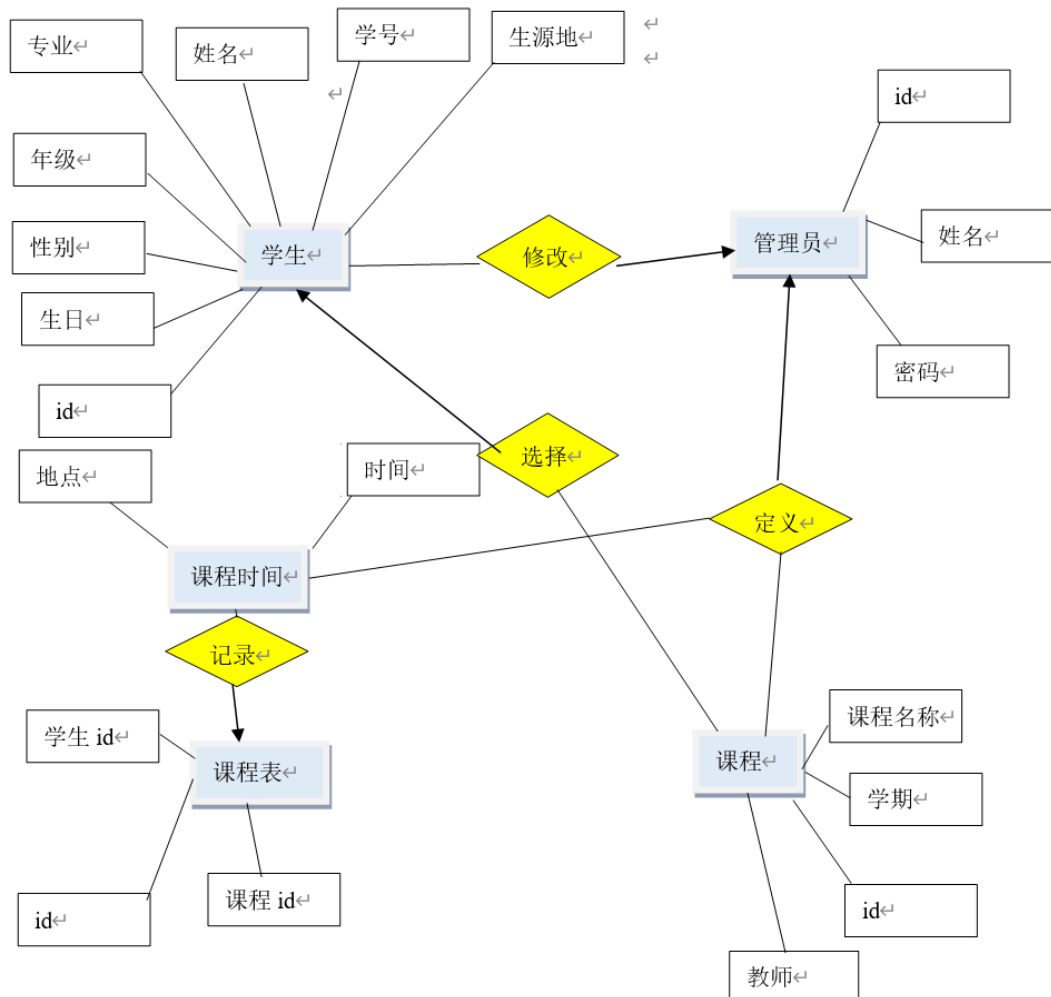


一. 数据库设计

1.1 概念模式设计



1.2 逻辑模式设计

学生（学生 id，学生姓名，学生学号，学生密码，学生年级，学生专业，学生生日，身份，学生户籍）

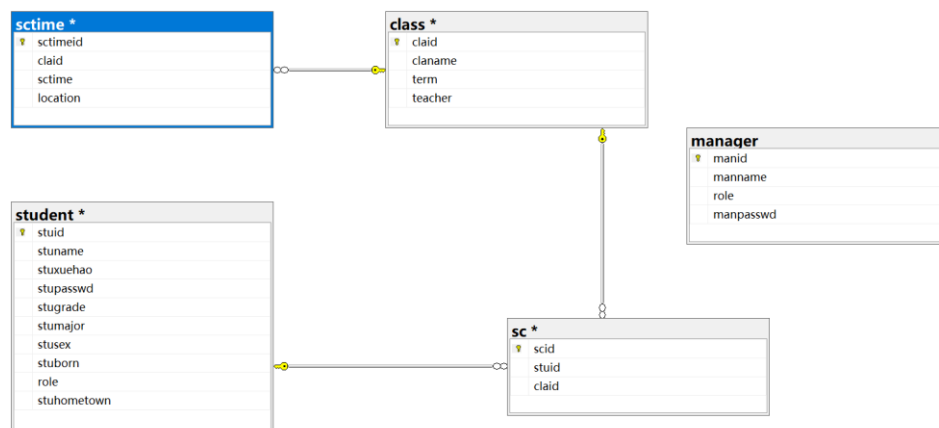
管理员（ 管理员 id，管理员姓名，身份，管理员密码。）

课程：（课程 id，课程名称，学期，任课老师。）

课程表：（课程表 id，学生 id，课程 id。）

课程时间：（课程时间 id，课程 id，时间，地点。）

1.3 物理数据库设计



1.4 触发器设计

Create trigger cldelete1 on [dbo].[class] after delete

As

Delete from [dbo].[sctime] where [claid] = (select [claid] from deleted)

go

Create trigger cldelete2 on [dbo].[class] after delete

As

Delete from [dbo].[sc] where [claid] = (select [claid] from deleted)

go

1.5 存储过程设计

1) 初始化课程

INSERT [dbo].[class] ([claid], [claname], [term], [teacher]) VALUES (1, N'大学英语四级', N'2425 第一学期', N'孙丹')

INSERT [dbo].[class] ([claid], [claname], [term], [teacher]) VALUES (2, N'电气技术基础', N'2324 第二学期', N'袁弘良')

INSERT [dbo].[class] ([claid], [claname], [term], [teacher]) VALUES (3, N'电子学与数字技术 2', N'2425 第一学期', N'霍勇')

INSERT [dbo].[class] ([claid], [claname], [term], [teacher]) VALUES (4, N'机械设计基础', N'2425

第一学期', N'谢春')

INSERT [dbo].[class] ([claid], [claname], [term], [teacher]) VALUES (5, N'数据库技术与应用', N'2425 第一学期', N'王睿智')

INSERT [dbo].[class] ([claid], [claname], [term], [teacher]) VALUES (6, N'人工智能技术与应用', N'2425 第二学期', N'王睿智')

2) 初始化管理员

INSERT [dbo].[manager] ([manid], [manname], [role], [manpasswd]) VALUES (2259999, N'clj', N'管理员', N'4321')

3) 初始化课程表

INSERT [dbo].[sc] ([scid], [stuid], [claid]) VALUES (7, 2251115, 1)

INSERT [dbo].[sc] ([scid], [stuid], [claid]) VALUES (8, 2251115, 2)

INSERT [dbo].[sc] ([scid], [stuid], [claid]) VALUES (9, 2251115, 4)

4) 初始化课程时间

INSERT [dbo].[sctime] ([sctimeid], [claid], [sctime], [location]) VALUES (1, 1, N'星期一第一节', N'A102')

INSERT [dbo].[sctime] ([sctimeid], [claid], [sctime], [location]) VALUES (2, 1, N'星期一第二节', N'A102')

INSERT [dbo].[sctime] ([sctimeid], [claid], [sctime], [location]) VALUES (3, 2, N'星期一第三节', N'B102')

INSERT [dbo].[sctime] ([sctimeid], [claid], [sctime], [location]) VALUES (4, 3, N'星期一第一节', N'A104')

INSERT [dbo].[sctime] ([sctimeid], [claid], [sctime], [location]) VALUES (5, 3, N'星期一第二节', N'A104')

INSERT [dbo].[sctime] ([sctimeid], [claid], [sctime], [location]) VALUES (6, 4, N'星期三第一节', N'B102')

INSERT [dbo].[sctime] ([sctimeid], [claid], [sctime], [location]) VALUES (7, 4, N'星期三第二节', N'B102')

INSERT [dbo].[sctime] ([sctimeid], [claid], [sctime], [location]) VALUES (8, 5, N'星期一第一节', N'A203')

INSERT [dbo].[sctime] ([sctimeid], [claid], [sctime], [location]) VALUES (9, 5, N'星期一第二节', N'A203')

INSERT [dbo].[sctime] ([sctimeid], [claid], [sctime], [location]) VALUES (10, 6, N'星期一第三节', N'A103')

INSERT [dbo].[sctime] ([sctimeid], [claid], [sctime], [location]) VALUES (11, 6, N'星期一第四节', N'A103')

5) 初始化学生

INSERT [dbo].[student] ([stuid], [stuname], [stuxuehao], [stupasswd], [stugrade], [stumajor], [stusex], [stuborn], [role], [stuhometown]) VALUES (1, N'刘荃亨', N'2251115', N'1234', N'大三', N'中德机械电子', N'男', N'2024-09-01', N'学生', N'天只因')

INSERT [dbo].[student] ([stuid], [stuname], [stuxuehao], [stupasswd], [stugrade], [stumajor], [stusex], [stuborn], [role], [stuhometown]) VALUES (2, N'赵建峰', N'2253465', N'1234', N'大三', N'中德经济工程', N'男', N'2024-09-01', N'学生', N'张掖')

INSERT [dbo].[student] ([stuid], [stuname], [stuxuehao], [stupasswd], [stugrade], [stumajor], [stusex], [stuborn], [role], [stuhometown]) VALUES (3, N'王浩喻', N'2253132', N'1234', N'大三',

N'中德汽车服务', N'男', N'2024-09-01', N'学生', N'坤明')

二. 系统设计和实现

2.1 窗体类和功能类统计表

访问对象	访问功能	窗体数量
未确认身份	登录	1
学生	查看课程表，查询课程，选课，修改密码	4
管理员	添加管理员信息，修改管理员信息，开设课程，查询课程，添加学生信息，修改学生信息，修改密码	7

2.2 界面设计及其代码实现

1) 登录



代码：

```
private void button1_Click(object sender, EventArgs e)
{
    name = textBoxname.Text.Trim();
    role = this.comboBoxrole.SelectedItem.ToString();
    if (name == "" || textBoxpasswd.Text.Trim() == "" || role == "")
    {
        MessageBox.Show("请将信息输入完整!");
    }
    else
```

```

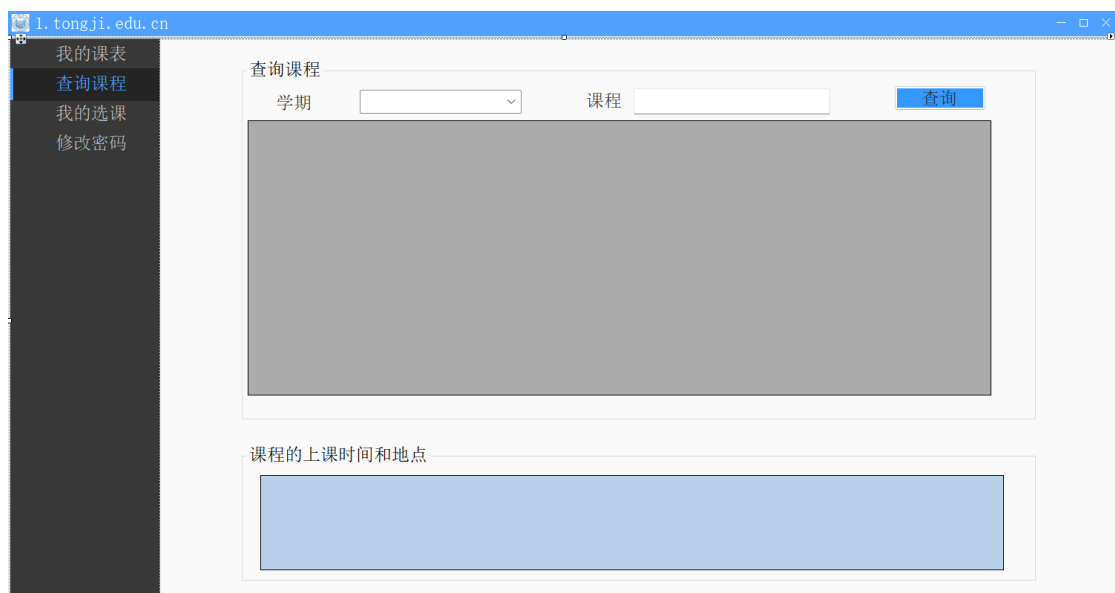
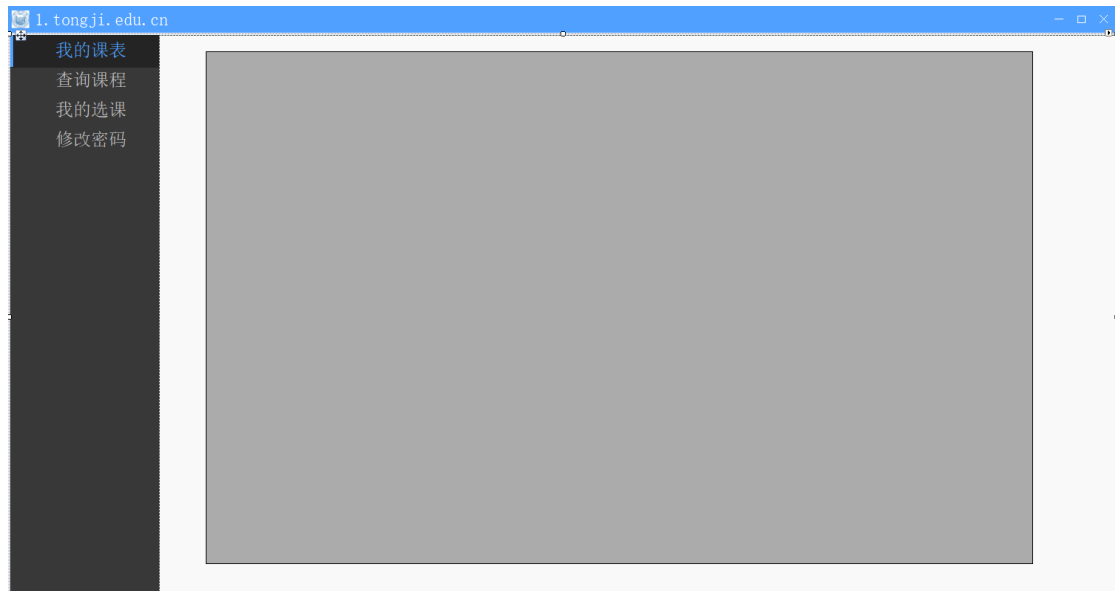
{
    SqlConnection conn = new SqlConnection(登陆.connectionString);
    conn.Open();
    if (role == "管理员")
    {
        string sql = "select manname,manpasswd from manager where role='管
理员' and manname='" + name +
        "' and manpasswd='" + textBoxpasswd.Text.Trim() + "'";
        SqlDataAdapter adp = new SqlDataAdapter(sql, conn);
        DataSet ds = new DataSet();
        adp.Fill(ds);
        if (ds.Tables[0].Rows.Count > 0)
        {
            conn.Close();
            管理员界面 mainframe = new 管理员界面();
            mainframe.BringToFront();
            mainframe.Show();
            this.Hide();
        }
    }
    else
    {
        MessageBox.Show("用户名或者密码错误!");
    }
}
else if (role == "学生")
{
    string sql1 = "select stuxuehao,stupasswd from student where role='
学生' and stuxuehao='" + name +
    "' and stupasswd='" + textBoxpasswd.Text.Trim() + "'";
    SqlDataAdapter adp = new SqlDataAdapter(sql1, conn);
    DataSet ds = new DataSet();
    adp.Fill(ds);
    if (ds.Tables[0].Rows.Count > 0)
    {
        //this.Close();
        conn.Close();
        学生UI mainframe = new 学生UI();
        mainframe.BringToFront();
        mainframe.Show();
        this.Hide();
    }
}
else
{

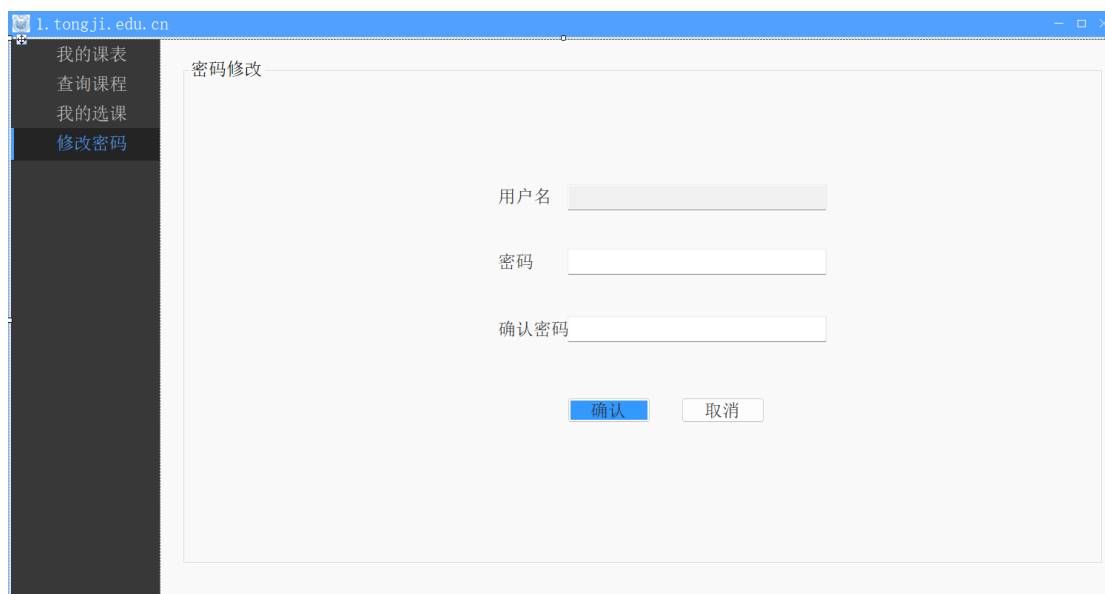
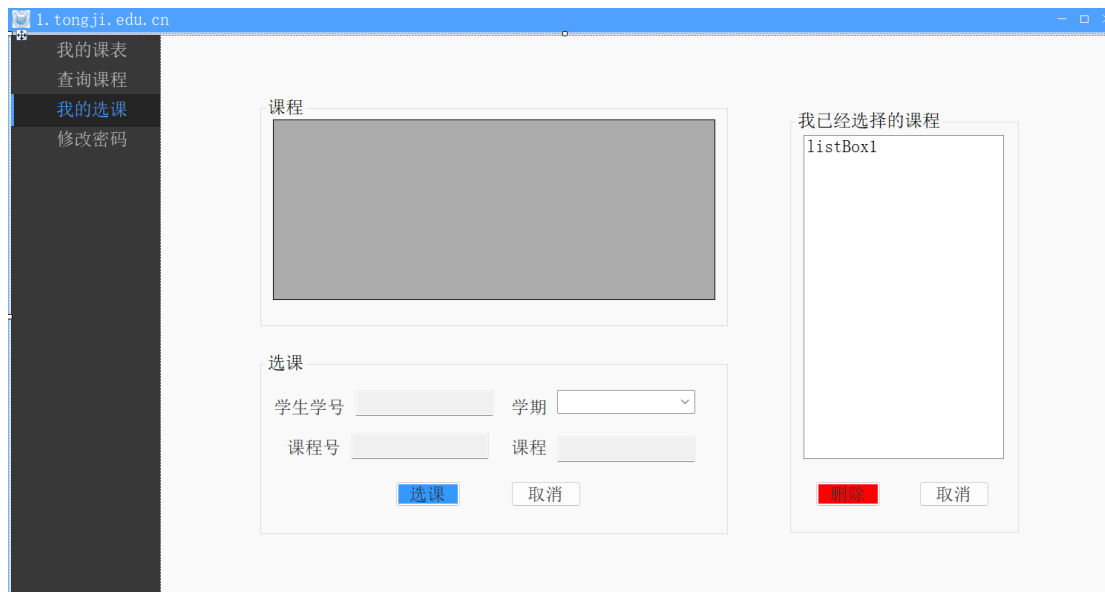
```

```
        MessageBox.Show("用户名或者密码错误!");
    }
}

}

2) 学生系统
```





```

代码: private void 学生UI_Load(object sender, EventArgs e)
{
    //首先得到用户的id
    string stuxuehao = 登陆.getStudent();
    SqlConnection conn = new SqlConnection(登陆.connectionString);
    conn.Open();
    string sql = "select stuid from student where stuxuehao = '" + stuxuehao +
    "' ";

    SqlCommand cmd = new SqlCommand(sql, conn);
    String id1 = cmd.ExecuteScalar().ToString();
    int stuid = 0;
    int.TryParse(id1, out stuid);
    //用到两个数据库的连接操作

```

```

        sql = "select class.claid as 课程id,class.claname as 课程名称,class.teacher
as 教师姓名,class.term as 学期," +
            "sctime.sctime as 上课时间,sctime.location as 上课地点 from
sc,sctime,class where class.claid=sc.claid and sc.claid=sctime.claid and sc.stuid=" +
stuid;

        SqlDataAdapter adp1 = new SqlDataAdapter(sql, conn);
        DataSet ds = new DataSet();
        adp1.Fill(ds);
        //载入基本信息
        dataGridView1.DataSource = ds.Tables[0].DefaultView;
        conn.Close();
        textBox4.Text = 登陆.getStudent();
        textBox5.Text = 登陆.getStudent();
    }
    private void button1_Click(object sender, EventArgs e)
    {
        while (dataGridView3.Rows.Count != 0)
        {
            dataGridView3.DataSource = null;
        }
        if (comboBoxterm.Text == "" && textBoxclass.Text == "")
        {
            MessageBox.Show("请输入查询信息!");
        }
        else if (comboBoxterm.Text != "" && textBoxclass.Text == "")
        {
            SqlConnection conn = new SqlConnection(登陆.connectionString);
            conn.Open();
            string sql = "select claid as 课程id,claname as 课程名,term as 学
期,teacher as 老师 from class where term = '" + comboBoxterm.SelectedItem.ToString() +
""";

            SqlDataAdapter adp1 = new SqlDataAdapter(sql, conn);
            DataSet ds = new DataSet();
            adp1.Fill(ds);
            //载入基本信息
            dataGridView3.DataSource = ds.Tables[0].DefaultView;
            conn.Close();
        }
        else if (textBoxclass.Text != "" && comboBoxterm.Text == "")
        {
            SqlConnection conn = new SqlConnection(登陆.connectionString);
            conn.Open();
            //textBox1.Text.Trim()  textBox2.Text.Trim()

```



```

        string sql = "select claid as 课程id,claname as 课程名,term as 学
期,teacher as 老师 from class where claname = '" + textBoxclass.Text + "'";
        SqlDataAdapter adp1 = new SqlDataAdapter(sql, conn);
        DataSet ds = new DataSet();
        adp1.Fill(ds);
        //载入基本信息
        dataGridview3.DataSource = ds.Tables[0].DefaultView;
        conn.Close();

    }

    else if (textBoxclass.Text != "" && comboBoxterm.Text != "")
    {

        SqlConnection conn = new SqlConnection(登陆.connectionString);
        conn.Open();
        //textBox1.Text.Trim()  textBox2.Text.Trim()
        string sql = "select claid as 课程id,claname as 课程名,term as 学
期,teacher as 老师 from class where claname = '" + textBoxclass.Text + "' and term = '"
+ comboBoxterm.SelectedItem.ToString() + "'";
        SqlDataAdapter adp1 = new SqlDataAdapter(sql, conn);
        DataSet ds = new DataSet();
        adp1.Fill(ds);
        //载入基本信息
        dataGridview3.DataSource = ds.Tables[0].DefaultView;
        conn.Close();
    }
}

private void dataGridview3_RowHeaderMouseClick(object sender,
DataGridViewCellMouseEventArgs e)
{
    if (dataGridview3.SelectedCells.Count != 0)
    {
        string claid = dataGridview3.SelectedRows[0].Cells[0].Value.ToString();
        SqlConnection conn = new SqlConnection(登陆.connectionString);
        conn.Open();
        string sql = "select sctime as 上课时间,location as 上课地点 from
sctime where claid=" + claid;
        SqlDataAdapter adp1 = new SqlDataAdapter(sql, conn);
        DataSet ds = new DataSet();
        adp1.Fill(ds);
        //载入基本信息
        dataGridview2.DataSource = ds.Tables[0].DefaultView;
        conn.Close();
    }
}

```

```

    }
}

private void button5_Click(object sender, EventArgs e)
{
    this.Close();
}

private void button6_Click(object sender, EventArgs e)
{
    string passwd = textBox2.Text;
    string quepasswd = textBox3.Text;
    SqlConnection conn = new SqlConnection(登陆.connectionString);
    conn.Open();
    if (passwd == "" || quepasswd == "")
    {
        MessageBox.Show("请将信息填写完整!");
    }
    else
    {
        if (quepasswd != passwd)
        {
            MessageBox.Show("两次输入的密码不一致!");
        }
        else
        {
            SqlCommand cmd = new SqlCommand();
            cmd.Connection = conn;
            string sql = "update student set stupasswd =' " + passwd + "
where stuxuehao = ' " + textBox4.Text + " ";
            cmd.CommandText = sql;
            cmd.ExecuteNonQuery();
            MessageBox.Show("修改密码成功!");
        }
    }
    conn.Close();
}
}

```

```

private void button7_Click(object sender, EventArgs e)
{
    string flags = "1";
    //得到stuid
    string stuxuehao = textBox5.Text;
    SqlConnection conn = new SqlConnection(登陆.connectionString);
    conn.Open();
    string sql = "select stuid from student where stuxuehao = '" + stuxuehao +
    "'";

    SqlCommand cmd = new SqlCommand(sql, conn);
    String id1 = cmd.ExecuteScalar().ToString();

    int.TryParse(id1, out stuid);
    //得到课程的id
    int claid = 0;
    int.TryParse(textBoxid.Text, out claid);
    //查询你在该时间是否有课
    sql = "select sctime from sctime where claid =" + claid;
    SqlDataAdapter adp = new SqlDataAdapter(sql, conn);
    DataSet ds = new DataSet();
    adp.Fill(ds);
    for (int i = 0; i < ds.Tables[0].Rows.Count; i++)
    {
        DataRow dr = ds.Tables[0].Rows[i];
        string time = dr[0].ToString();//第一列
        sql = "select * from sc,sctime,class where class.claid = sc.claid and
class.claid = sctime.claid and sctime = '" + time + "' and sc.stuid =" + stuid;
        SqlDataAdapter adp1 = new SqlDataAdapter(sql, conn);
        DataSet ds1 = new DataSet();
        adp1.Fill(ds1);
        if (ds1.Tables[0].Rows.Count > 0)
        {
            flags = "2";
            MessageBox.Show("课程上课时间冲突!");
            break;
        }
    }
    if (flags == "1")
    {
        sql = "insert into sc(claid,stuid) values('" + claid + "','" + stuid +
        "')";

        cmd.CommandText = sql;
        if (cmd.ExecuteNonQuery() > 0)
        {

```

```

        MessageBox.Show("选课成功!");

    }

}

if (listBox1.Items.Count > 0)
{
    //清空所有项
    listBox1.Items.Clear();
}

sql = "select class.claname from sc,class where sc.claid = class.claid and
stuid=" + stuid;

SqlDataAdapter adp2 = new SqlDataAdapter(sql, conn);
DataSet ds2 = new DataSet();
adp2.Fill(ds2);
foreach (DataRow row in ds2.Tables[0].Rows)
{
    listBox1.Items.Add(row[0].ToString());
}
conn.Close();
}

private void comboBox1_SelectedIndexChanged(object sender, EventArgs e)
{
    while (dataGridView4.Rows.Count != 0)
    {
        dataGridView4.DataSource = null;
    }

    string term = comboBox1.SelectedItem.ToString();
    Console.WriteLine(term);
    SqlConnection conn = new SqlConnection(登陆.connectionString);
    conn.Open();
    string sql = "select claid as 课程id,claname as 课程 from class where
term=" + term + "'";
    SqlDataAdapter adp1 = new SqlDataAdapter(sql, conn);
    DataSet ds = new DataSet();
    adp1.Fill(ds);
    //载入基本信息
    dataGridView4.DataSource = ds.Tables[0].DefaultView;
    conn.Close();
}

private void mos_click(object sender, DataGridViewCellMouseEventArgs e)
{
    textBoxid.Text = dataGridView4.SelectedRows[0].Cells[0].Value.ToString();
    textBox1.Text = dataGridView4.SelectedRows[0].Cells[1].Value.ToString();
}

```

```

    }

    private void button2_Click(object sender, EventArgs e)
    {
        this.Close();
    }

    private void button4_Click(object sender, EventArgs e)
    {
        string claname = listBox1.SelectedItem.ToString();
        SqlConnection conn = new SqlConnection(登陆.connectionString);
        conn.Open();
        string sql = "select claid from class where claname = '" + claname + "'";
        SqlCommand cmd = new SqlCommand(sql, conn);
        String id1 = cmd.ExecuteScalar().ToString();
        int claid = 0;
        int.TryParse(id1, out claid);
        sql = "delete from sc where claid = " + claid + " and stuid = " + stuid;
        cmd.CommandText = sql;
        if (cmd.ExecuteNonQuery() > 0)
        {
            MessageBox.Show("删除成功!");
            if (listBox1.Items.Count > 0)
            {
                //清空所有项
                listBox1.Items.Clear();
            }
            sql = "select class.claname from sc,class where sc.claid = class.claid
and stuid=" + stuid;
            SqlDataAdapter adp2 = new SqlDataAdapter(sql, conn);
            DataSet ds2 = new DataSet();
            adp2.Fill(ds2);
            foreach (DataRow row in ds2.Tables[0].Rows)
            {
                listBox1.Items.Add(row[0].ToString());
            }
        }

        conn.Close();
    }

    private void button3_Click(object sender, EventArgs e)
    {

```

```

        this.Close();
    }

    private void dataGridView1_CellContentClick(object sender,
DataGridViewCellEventArgs e)
    {

    }

    // 定义一个布尔标志，标记是否是第一次选择标签
    private bool isFirstSelection = true;

    private void uiTabControlMenu1_SelectedIndexChanged(object sender, EventArgs e)
    {
        // 只在第一次选择标签时执行
        if (isFirstSelection)
        {
            选课须知 mainframe = new 选课须知();
            mainframe.BringToFront();
            mainframe.Show();

            // 设置标志为 false，表示不再执行这个操作
            isFirstSelection = false;
        }
    }
}

```

3) 管理员系统



代码:

```
private void treeView1_AfterSelect(object sender, TreeViewEventArgs e)
{
    switch (this.treeView1.SelectedNode.Text)
    {
```

```
case "开设课程":
    开课 f1 = new 开课();
    f1.TopLevel = false;
    f1.FormBorderStyle = FormBorderStyle.None;
    f1.WindowState = FormWindowState.Maximized;

    panel2.Controls.Add(f1);
    f1.Show();
    break;
case "查询课程":
    查询课程 f2 = new 查询课程();
    f2.TopLevel = false;
    f2.FormBorderStyle = FormBorderStyle.None;
    f2.WindowState = FormWindowState.Maximized;

    panel2.Controls.Add(f2);
    f2.Show();
    break;
case "添加管理员信息":
    添加管理员信息 f3 = new 添加管理员信息();
    f3.TopLevel = false;
    f3.FormBorderStyle = FormBorderStyle.None;
    f3.WindowState = FormWindowState.Maximized;

    panel2.Controls.Add(f3);
    f3.Show();
    break;
case "修改管理员信息":
    修改管理员信息 f4 = new 修改管理员信息();
    f4.TopLevel = false;
    f4.FormBorderStyle = FormBorderStyle.None;
    f4.WindowState = FormWindowState.Maximized;

    panel2.Controls.Add(f4);
    f4.Show();
    break;
case "添加学生信息":
    添加学生信息 f5 = new 添加学生信息();
    f5.TopLevel = false;
    f5.FormBorderStyle = FormBorderStyle.None;
    f5.WindowState = FormWindowState.Maximized;

    panel2.Controls.Add(f5);
```

```

        f5.Show();
        break;
    case "修改学生信息":
        modifystuForm f6 = new modifystuForm();
        f6.TopLevel = false;
        f6.FormBorderStyle = FormBorderStyle.None;
        f6.WindowState = FormWindowState.Maximized;

        panel12.Controls.Add(f6);
        f6.Show();
        break;
    case "退出系统":
        Application.Exit();
        break;
    case "修改密码":
        密码修改 f7 = new 密码修改();
        f7.TopLevel = false;
        f7.FormBorderStyle = FormBorderStyle.None;
        f7.WindowState = FormWindowState.Maximized;
        panel12.Controls.Add(f7);
        f7.Show();
        break;
}

```

4) 添加管理员信息

The screenshot shows a web browser window with the address bar displaying '1.tongji.edu.cn'. The page content is a form titled '添加管理员信息' (Add Administrator Information). The form contains three text input fields labeled '用户名' (Username), '密码' (Password), and '验证密码' (Verify Password). Below these fields are two buttons: a blue '添加' (Add) button and a white '取消' (Cancel) button.

代码: `private void button1_Click(object sender, EventArgs e)`

```

{
    if (textBox1.Text.Trim() == "" || textBox2.Text.Trim() == "")
    {

```

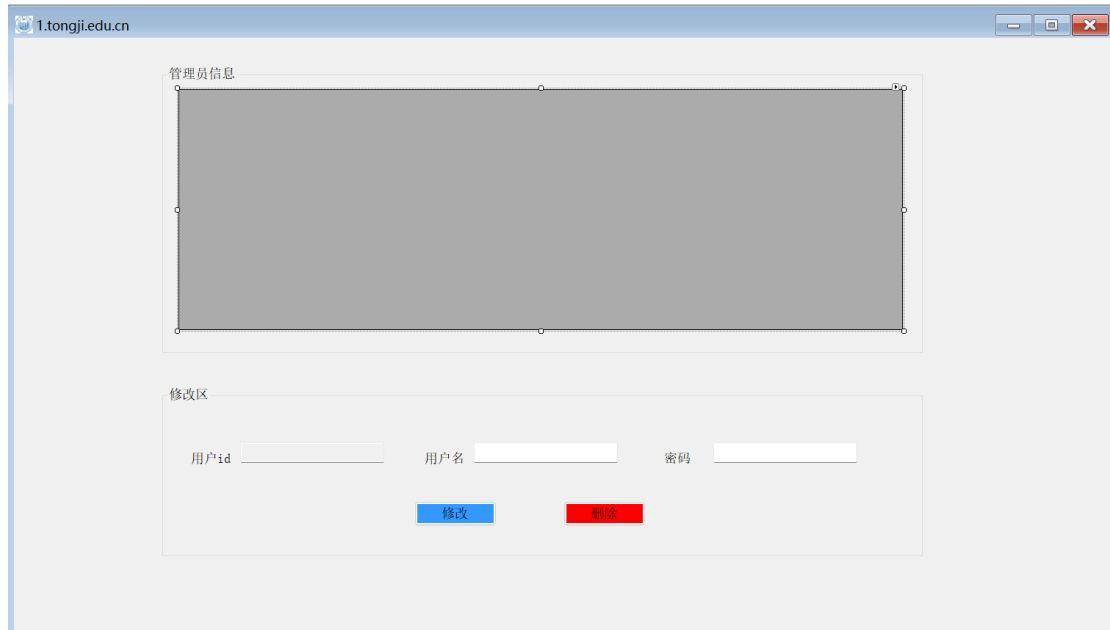


```

        MessageBox.Show("请将信息填写完整!");
    }
    else
    {
        if (textBox2.Text.Trim() != textBox3.Text.Trim())
        {
            MessageBox.Show("两次输入的密码不一致!");
        }
        else
        {
            SqlConnection conn = new SqlConnection(登陆.connectionString);
            conn.Open();
            string sql = "select * from manager where manname = "
'"+textBox1.Text+"";
            SqlDataAdapter adp = new SqlDataAdapter(sql, conn);
            DataSet ds = new DataSet();
            adp.Fill(ds);
            if (ds.Tables[0].Rows.Count > 0)
            {
                MessageBox.Show("已经存在的用户名称!");
            }
            else
            {
                SqlCommand cmd = new SqlCommand();
                cmd.Connection = conn;
                sql = "insert into manager (manname,manpasswd) values (' "
                    + textBox1.Text.Trim() + "', '" + textBox2.Text.Trim() + "')";
                cmd.CommandText = sql;
                cmd.ExecuteNonQuery();
                MessageBox.Show("添加用户成功!");
            }
            conn.Close();
        }
    }
}

```

5) 修改管理员信息



```

代码: private void mos_click(object sender, DataGridViewCellEventArgs e)
{
    if (dataGridView1.SelectedCells.Count != 0)
    {
        textBox3.Text =
dataGridView1.SelectedRows[0].Cells[0].Value.ToString();
        textBox1.Text =
dataGridView1.SelectedRows[0].Cells[1].Value.ToString();
        textBox2.Text =
dataGridView1.SelectedRows[0].Cells[2].Value.ToString();
    }

}

private void getResult()
{
    SqlConnection conn = new SqlConnection(登陆.connectionString);
    conn.Open();
    //textBox1.Text.Trim() textBox2.Text.Trim()
    string sql = "select manid as 用户id, manname as 用户名,manpasswd as 密码
from manager";
    SqlDataAdapter adp1 = new SqlDataAdapter(sql, conn);
    DataSet ds = new DataSet();
    adp1.Fill(ds);
    //载入基本信息
    dataGridView1.DataSource = ds.Tables[0].DefaultView;
    conn.Close();
}

```

```

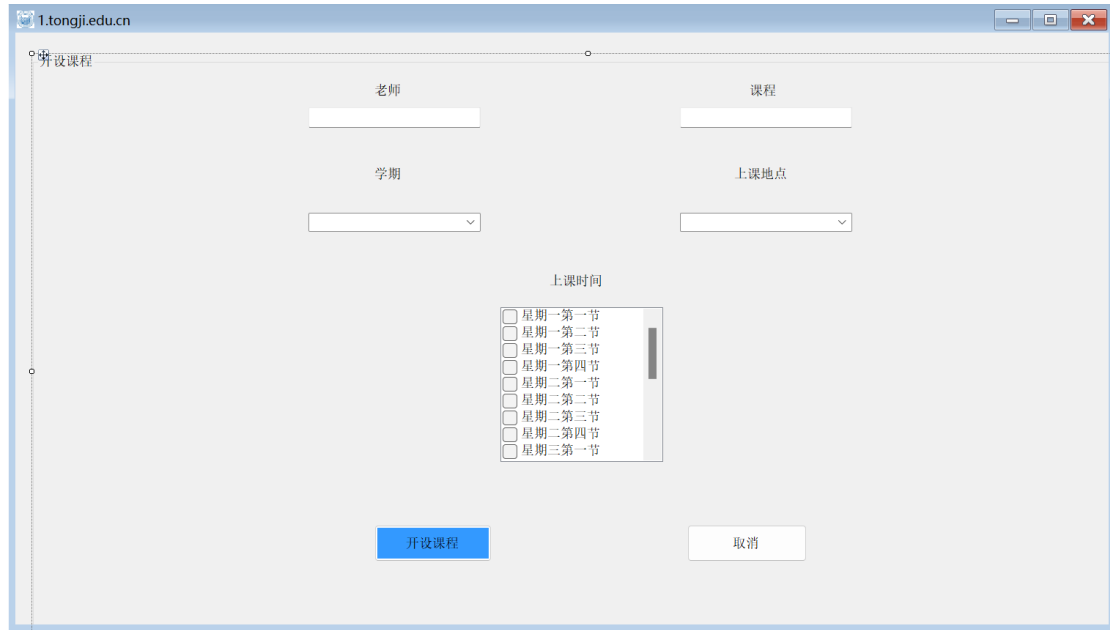
private void button1_Click(object sender, EventArgs e)
{
    SqlConnection conn = new SqlConnection(登陆.connectionString);
    conn.Open();
    int id = 0;
    int.TryParse(textBox3.Text, out id);
    string sql = "update manager set manname = '" + textBox1.Text +
    "'",manpasswd = '" + textBox2.Text + "' where manid = " + id;
    SqlCommand cmd = new SqlCommand(sql, conn);
    if (cmd.ExecuteNonQuery() > 0)
    {
        this.getRusult();
        MessageBox.Show("更改成功!");
    }
    conn.Close();
}

private void button2_Click(object sender, EventArgs e)
{
    SqlConnection conn = new SqlConnection(登陆.connectionString);
    conn.Open();
    int id = 0;
    int.TryParse(textBox3.Text, out id);
    string sql = "delete from manager where manid = " + id;
    SqlCommand cmd = new SqlCommand(sql, conn);
    if (cmd.ExecuteNonQuery() > 0)
    {
        this.getRusult();
        MessageBox.Show("删除成功!");
    }

    conn.Close();
}

```

6) 开课



```
代码: private void groupBox1_Enter(object sender, EventArgs e)
{

}
```

```
private void button1_Click(object sender, EventArgs e)
{
    string teacher = textBoxteacher.Text;
    string classes = textBoxclass.Text;
    string term = comboBoxterm.SelectedItem.ToString();
    string flags = "1";
    SqlConnection conn = new SqlConnection(登陆.connectionString);
    conn.Open();
    SqlCommand cmd = new SqlCommand();
    cmd.Connection = conn;
    //将开课信息插入到开课表里

    //MessageBox.Show("开设课程成功!");
    string sql = "";
    //得到上课的地点
    string didian = comboBoxdidian.SelectedItem.ToString();
    //checkedListBoxtime

    for (int i = 0; i < checkedListBoxtime.Items.Count; i++)
    {
        if (checkedListBoxtime.GetItemChecked(i))
        {
            string time =
```

```

checkedListBoxtime.GetItemText(checkedListBoxtime.Items[i]);
        sql = "select * from sctime where sctime = '" + time + "' and
location = '" + didian + "'";
        SqlDataAdapter adp = new SqlDataAdapter(sql, conn);
        DataSet ds = new DataSet();
        adp.Fill(ds);
        if (ds.Tables[0].Rows.Count > 0)
        {
            flags = "2";
            MessageBox.Show("该时间该教室已经有课!");
            break;
        }
        else
        {
            flags = "1";
            break;
        }
    }
}

if (flags == "1")
{
    sql = "insert into class (claname,term,teacher) values ('" + classes +
    "',''" + term + "',''" + teacher + "')";
    cmd.CommandText = sql;
    cmd.ExecuteNonQuery();

    for (int i = 0; i < checkedListBoxtime.Items.Count; i++)
    {
        if (checkedListBoxtime.GetItemChecked(i))
        {
            string time =
checkedListBoxtime.GetItemText(checkedListBoxtime.Items[i]);
            //将开课表的id得到
            sql = "select claid from class where claname = '" + classes +
            "' and term = '" + term + "' and teacher = '" + teacher + "'";
            cmd.CommandText = sql;
            String id1 = cmd.ExecuteScalar().ToString();
            int id = 0;
            int.TryParse(id1, out id);
            sql = "insert into sctime values(" + id + "','" + time + "',''" +
didian + "')";

```

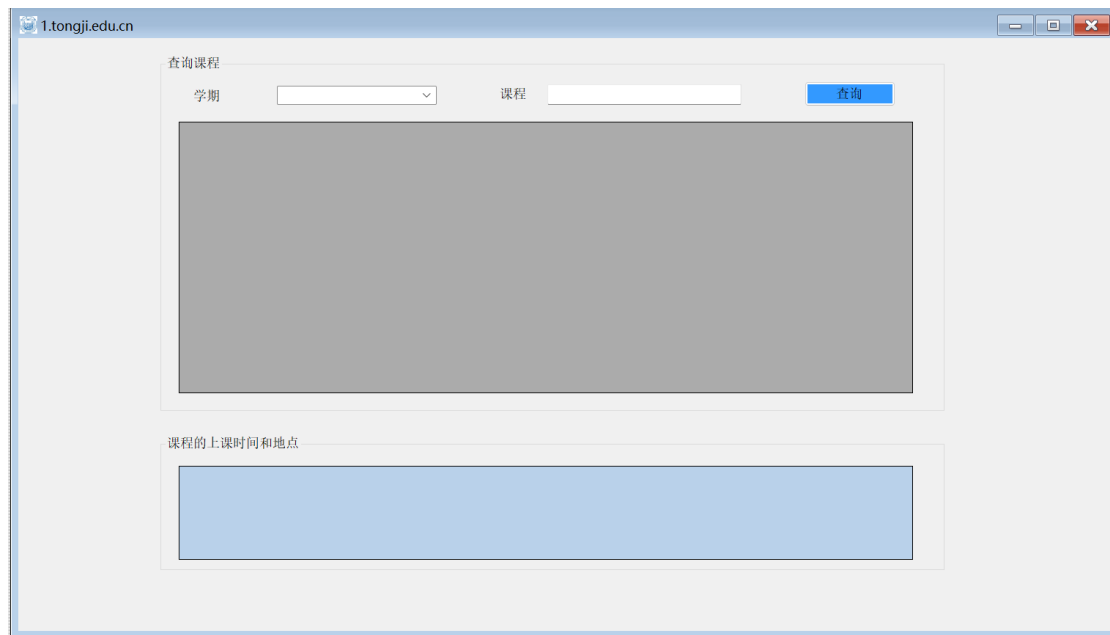
```

        cmd.CommandText = sql;
        cmd.ExecuteNonQuery();
    }
}
MessageBox.Show("开设课程成功!");
}

```

```
conn.Close();
```

7) 查询课程



```

代码: private void button1_Click(object sender, EventArgs e)
{
    while (dataGridView1.Rows.Count != 0)
    {
        dataGridView1.DataSource = null;
    }
    if (comboBoxterm.Text == "" && textBoxclass.Text == "")
    {
        MessageBox.Show("请输入查询信息!");
    }
    else if (comboBoxterm.Text != "" && textBoxclass.Text == "")
    {
        SqlConnection conn = new SqlConnection(登陆.connectionString);
        conn.Open();
        string sql = "select claid as 课程id,claname as 课程名,term as 学
期,teacher as 老师 from class where term = '" + comboBoxterm.SelectedItem.ToString() +
"'";

        SqlDataAdapter adp1 = new SqlDataAdapter(sql, conn);
        DataSet ds = new DataSet();
    }
}

```

```

        adp1.Fill(ds);
        //载入基本信息
        dataGridView1.DataSource = ds.Tables[0].DefaultView;
        conn.Close();
    }
    else if (textBoxclass.Text != "" && comboBoxterm.Text == "")
    {

        SqlConnection conn = new SqlConnection(登陆.connectionString);
        conn.Open();
        //textBox1.Text.Trim()  textBox2.Text.Trim()
        string sql = "select claid as 课程id,claname as 课程名,term as 学
期,teacher as 老师 from class where claname = '" + textBoxclass.Text + "'";
        SqlDataAdapter adp1 = new SqlDataAdapter(sql, conn);
        DataSet ds = new DataSet();
        adp1.Fill(ds);
        //载入基本信息
        dataGridView1.DataSource = ds.Tables[0].DefaultView;
        conn.Close();

    }
    else if (textBoxclass.Text != "" && comboBoxterm.Text != "")
    {

        SqlConnection conn = new SqlConnection(登陆.connectionString);
        conn.Open();
        //textBox1.Text.Trim()  textBox2.Text.Trim()
        string sql = "select claid as 课程id,claname as 课程名,term as 学
期,teacher as 老师 from class where claname = '" + textBoxclass.Text + "' and term = '"
+ comboBoxterm.SelectedItem.ToString() + "'";
        SqlDataAdapter adp1 = new SqlDataAdapter(sql, conn);
        DataSet ds = new DataSet();
        adp1.Fill(ds);
        //载入基本信息
        dataGridView1.DataSource = ds.Tables[0].DefaultView;
        conn.Close();

    }

}

```

```

private void dataGridView1_RowHeaderMouseClick(object sender,
DataGridViewCellMouseEventArgs e)
{
    if (dataGridView1.SelectedCells.Count != 0)
    {
        string claid = dataGridView1.SelectedRows[0].Cells[0].Value.ToString();
        SqlConnection conn = new SqlConnection(登陆.connectionString);
        conn.Open();
        string sql = "select sctime as 上课时间,location as 上课地点 from
sctime where claid="+claid;
        SqlDataAdapter adp1 = new SqlDataAdapter(sql, conn);
        DataSet ds = new DataSet();
        adp1.Fill(ds);
        //载入基本信息
        dataGridView2.DataSource = ds.Tables[0].DefaultView;
        conn.Close();
    }
}

```

8) 添加学生信息

1.tongji.edu.cn

添加学生信息

学生姓名

学号

密码

年级

专业

性别 ☐ 男 ☐ 女

出生日期

户籍地

```

代码: private void button1_Click(object sender, EventArgs e)
{
    SqlConnection conn = new SqlConnection(登陆.connectionString);
    conn.Open();
    string sql = "select * from student where stuxuehao='" +
textBoxname.Text.Trim() + "'";
    SqlDataAdapter adp = new SqlDataAdapter(sql, conn);
    DataSet ds = new DataSet();
}

```



```

adp.Fill(ds);
if (ds.Tables[0].Rows.Count > 0)
{
    MessageBox.Show("已经存在的学生学号!");
}

else
{
    SqlCommand cmd = new SqlCommand();
    cmd.Connection = conn;
    string gender = radioButton1.Checked ? "男" : "女";
    sql = "insert into
student(stuname,stuxuehao ,stupasswd,stugrade ,stumajor,stusex,stuborn,stuhometown)valu
es(' " + textBoxname.Text.Trim() + "',' " + textBoxpname.Text.Trim() + "',' " +
textBoxpasswd.Text.Trim() + "',' " + comboBoxgrade.SelectedItem.ToString() + "',' " +
comboBoxmajor.SelectedItem.ToString() + "',' " + gender + "',' " +
dateTimePicker1.Value.ToString("yyyy-MM-dd") + "',' " + textBoxhometown.Text.Trim() +
"')";

    cmd.CommandText = sql;
    cmd.ExecuteNonQuery();
    MessageBox.Show("添加用户成功!");
}
conn.Close();
}

```

9) 修改学生信息

代码:

```
private void getRusult()
{
```

```

SqlConnection conn = new SqlConnection(登陆.connectionString);
conn.Open();
//textBox1.Text.Trim()  textBox2.Text.Trim()
string sql = "select stuid as 用户id,stuname as 真实姓名,stuxuehao as 学
号,stupasswd as 密码,stugrade as 年级,stumajor as 专业,stusex as 性别,stuborn as 出生日
期,stuhometown as 籍贯 from student";
SqlDataAdapter adp1 = new SqlDataAdapter(sql, conn);
DataSet ds = new DataSet();
adp1.Fill(ds);
//载入基本信息
dataGridView1.DataSource = ds.Tables[0].DefaultView;
conn.Close();
}

private void mos_click(object sender, DataGridViewCellMouseEventArgs e)
{
    textBoxname.Text = dataGridView1.SelectedRows[0].Cells[1].Value.ToString();
    textBoxborn.Text = dataGridView1.SelectedRows[0].Cells[7].Value.ToString();
    comboBoxgrade.Text =
dataGridView1.SelectedRows[0].Cells[4].Value.ToString();
    textBoxhometown.Text =
dataGridView1.SelectedRows[0].Cells[8].Value.ToString();
    comboBoxmajor.Text =
dataGridView1.SelectedRows[0].Cells[5].Value.ToString();
    textBoxpasswd.Text =
dataGridView1.SelectedRows[0].Cells[3].Value.ToString();
    textBoxpname.Text =
dataGridView1.SelectedRows[0].Cells[2].Value.ToString();
    textBoxid.Text = dataGridView1.SelectedRows[0].Cells[0].Value.ToString();
    string gender = dataGridView1.SelectedRows[0].Cells[6].Value.ToString();

    if (gender == "男")
    {
        radioButton1.Select();
    }
    else
    {
        radioButton2.Select();
    }
}

private void textBoxname_TextChanged(object sender, EventArgs e)
{

```

```

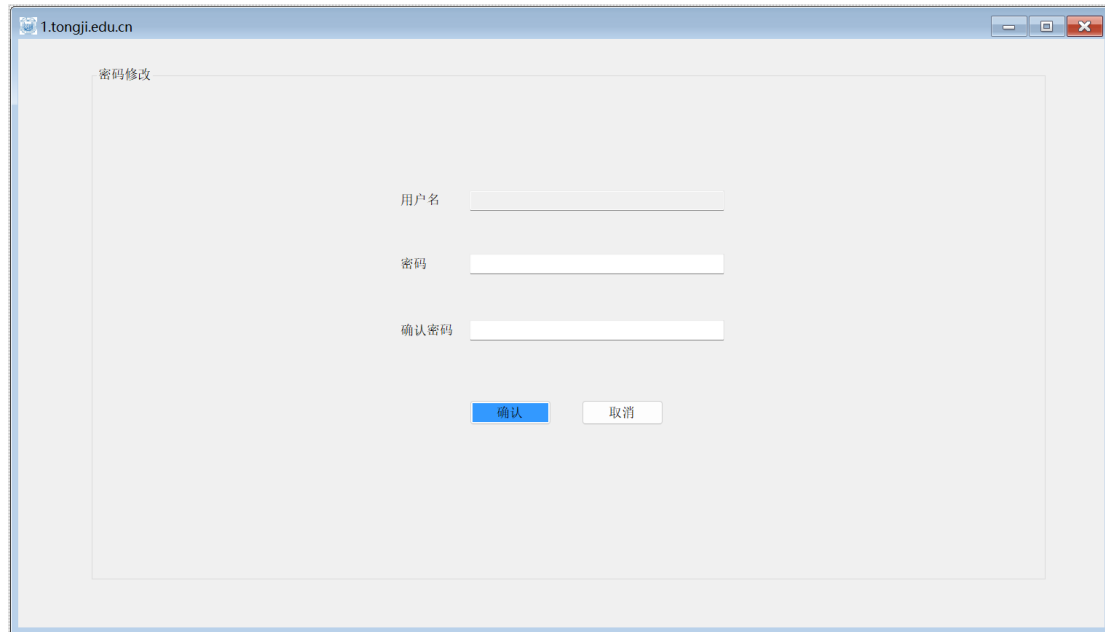
    }

    private void button1_Click(object sender, EventArgs e)
    {
        SqlConnection conn = new SqlConnection(登陆.connectionString);
        conn.Open();
        string gender = radioButton1.Checked ? "男" : "女";
        int id = 0;
        int.TryParse(textBoxid.Text, out id);
        //this.comboBoxrole.SelectedItem.ToString()
        string major = comboBoxmajor.SelectedItem.ToString();
        string grade = comboBoxgrade.SelectedItem.ToString();
        string sql = "update student set stuname = '" + textBoxname.Text + "', stuborn = '" +
        textBoxborn.Text + "', stugrade = '" + grade + "', stuhometown = '" +
        textBoxhometown.Text + "', stumajor = '" + major + "', stupasswd = '" +
        textBoxpasswd.Text + "', stuxuehao = '" + textBoxpname.Text + "', stusex = '" + gender + "'
        where stuid = " + id;
        SqlCommand cmd = new SqlCommand(sql, conn);
        if (cmd.ExecuteNonQuery() > 0)
        {
            MessageBox.Show("更改成功!");
            this.getRusult();
        }
        conn.Close();
    }

    private void button2_Click(object sender, EventArgs e)
    {
        SqlConnection conn = new SqlConnection(登陆.connectionString);
        conn.Open();
        int id = 0;
        int.TryParse(textBoxid.Text, out id);
        string sql = "delete from student where stuid = " + id;
        SqlCommand cmd = new SqlCommand(sql, conn);
        if (cmd.ExecuteNonQuery() > 0)
        {
            MessageBox.Show("删除成功!");
            this.getRusult();
        }
    }

```

10) 修改密码



```
代码: public partial class 密码修改 : Form
{
    public 密码修改()
    {
        InitializeComponent();
    }

    private void modifymimaForm_Load(object sender, EventArgs e)
    {
        textBox1.Text = 登陆.getStudent();
    }

    private void button1_Click(object sender, EventArgs e)
    {
        string passwd = textBox2.Text;
        string quepasswd = textBox3.Text;
        SqlConnection conn = new SqlConnection(登陆.connectionString);
        conn.Open();
        if (passwd == "" || quepasswd == "")
        {
            MessageBox.Show("请将信息填写完整!");
        }
        else
        {
            if (quepasswd != passwd)
            {
                MessageBox.Show("两次输入的密码不一致!");
            }
        }
    }
}
```

```

    }
    else
    {

        if(登陆.getRole()=="学生")
        {
            SqlCommand cmd = new SqlCommand();
            cmd.Connection = conn;
            string sql = "update student set stupasswd ='"+ passwd+"'" where
stuxuehao = '"+textBox1.Text+"";
            cmd.CommandText = sql;
            cmd.ExecuteNonQuery();
            MessageBox.Show("修改密码成功!");
        }
        else
        {
            SqlCommand cmd = new SqlCommand();
            cmd.Connection = conn;
            string sql = "update manager set manpasswd ='"+ passwd+"'" where
manname = '"+textBox1.Text+"";
            cmd.CommandText = sql;
            cmd.ExecuteNonQuery();
            MessageBox.Show("修改密码成功!");
        }

    }

    conn.Close();
}

```

三. 系统测试

3.1 触发器测试用例


```

delete from class where claid=4
select * from class
select * from sctime
select * from sc

```

146 %

结果 消息

	claid	claname	term	teacher
1	1	大学英语四级	2425第一学期	孙丹
2	2	电气技术基础	2324第二学期	袁弘良
3	3	电子学与数字技术2	2425第一学期	霍勇
4	5	数据库技术与应用	2425第一学期	王睿智
5	6	人工智能技术与应用	2425第二学期	王睿智

	sctimeid	claid	sctime	location
1	1	1	星期一第一节	A102
2	2	1	星期一第二节	A102
3	3	2	星期一第三节	B102
4	4	3	星期一第一节	A104
5	5	3	星期一第二节	A104
6	8	5	星期一第一节	A203
7	9	5	星期一第二节	A203
8	10	6	星期一第三节	A103
9	11	6	星期一第四节	A103

	scid	stuid	claid
1	7	2251115	1
2	8	2251115	2